

ABSTRACT OF THE DISCLOSURE

An inexpensive method of rapidly fabricating reactive metal (Zn, Al, Al-alloy, etc.) microscale structures including high-aspect-ratio microscale structures is disclosed. A high precision process uses conformal bond inhibitor coating and high temperature compression molding techniques to produce high quality, high aspect ratio metal structures. In one embodiment, following fabrication of an initial metallic microscale mold insert, an adhesion-promoting metal precursor layer and a ceramic bond inhibitor coating are conformally deposited onto the microscale mold insert. The microscale mold insert and a preselected reactive metal are then heated to an optimum temperature and compressed together. The mold insert is then extracted from the molded metal to produce a reverse image of the mold insert.